



American White Pelican

Pelecanus erythrorhynchos

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GENERAL RANGE AND WASHINGTON DISTRIBUTION

American white pelicans occur throughout the western, central, and southern parts of North America. These pelicans are colonial nesters, breeding primarily in the western and central United States and Canada, and wintering along the southern coast of the United States and in Mexico. Canada supports the largest population of breeding American white pelicans, with colonies located in Alberta, British Columbia, Manitoba, Ontario, and Saskatchewan. In the United States, breeding colonies are located in California, Colorado, Idaho, Minnesota, Montana, Nevada, North Dakota, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming (Ackerman 1994; Sidle et al. 1985; J. Annear, personal communication).



Figure 1. Range of the American white pelican, *Pelecanus erythrorhynchos*, in Washington. Map derived from Washington Department of Fish and Wildlife data files.

The population can be roughly split into 2 groups based upon differences in their ranges. The western group, which includes American white pelicans occurring in Washington state (see Figure 1), breeds to the west of the Rocky Mountains and winters along the Pacific Coast from central California to Mexico, mainly along Baja California and the western coast of Mexico (U. S. Fish and Wildlife Service 1984). Additionally, small numbers of American white pelicans winter on inland waters in Oregon and Washington (U. S. Fish and Wildlife Service 1984; L. Fitzner, personal communication; R. Friesz, personal communication). The migratory route of the western population takes in all states west of the continental divide and Mexico (U. S. Fish and Wildlife Service 1984).

Historically, American white pelicans were known to occur and presumed to have bred in eastern Washington on inland waters such as Sprague and Moses Lakes (Dawson and Bowles 1909). The first nesting record is from 1926 at Moses Lake, Grant County (Brown 1926). Jewett et al. (1953) stated that the Moses Lake colony continued for several years. From 1926 through 1994 there were no published records of American white pelicans breeding in Washington. In 1994 a breeding colony was established on Crescent Island, which was constructed for nesting birds in the Columbia River, Walla Walla County in 1985 (Ackerman 1994). American white pelicans have continued to nest on Crescent Island up to the date of this publication. In 1994 an estimated 30 nests produced approximately 50 juveniles, and in 1996 an estimated 25 nests produced approximately 35 young (Ackerman 1997). Nests and young were not counted in 1995. However, breeding was confirmed on the island and numbers were estimated to be similar to those in 1994 (Ackerman 1997). In 1997, the colony initiated nesting on nearby Badger Island. After high water

destroyed some of the nests, a portion of the colony returned to Crescent Island and initiated a second nesting attempt. At the time of this publication, American white pelicans were nesting on both Badger and Crescent Islands (Ackerman 1997).

In addition to the breeding colonies present on Crescent and Badger Islands, the inland waters of eastern Washington support a significant number of non-breeding American white pelicans throughout the year. Non-breeding American white pelicans can be found along the Columbia River from the Dalles through Chief Joseph pool. Numbers of these pelicans vary greatly during the summer, with peaks of up to 2000 birds observed in the potholes region of the Columbia Basin during late summer (R. Friesz, personal communication; J. Tabor, personal communication). Numbers of summer residents have declined substantially since 1990 (L. Fitzner, personal communication). Wintering concentrations, ranging from 40-300 birds, occur along the Columbia River from the mouth of the Walla Walla River to Priest Rapids (L. Fitzner, personal communication; E. Nelson, personal communication). Therefore, areas within Washington state may play an important regional role in sustaining non-breeding summer residents and birds which have dispersed from their breeding grounds in adjacent states and provinces.

RATIONALE

The American white pelican is a State Endangered species. In Washington, colonies of American white pelicans have disappeared from historical breeding areas (Dawson and Bowles 1909, Johnsgard 1955). Currently, only one breeding colony exists in Washington (Ackerman 1994, 1997). Suitable nesting habitat that is free from human disturbance is rapidly declining (Motschenbacher 1984), thus there are few opportunities for breeding populations of American white pelicans to become reestablished. Additionally, non-breeding and wintering populations occur in Washington throughout the year (R. Friesz, personal communication; L. Fitzner, personal communication).

HABITAT REQUIREMENTS

American white pelicans are colonial nesters that breed most often on isolated islands in freshwater lakes and occasionally on isolated islands in rivers. Islands free from human disturbance, mammalian predators, flooding, and erosion are required for successful nesting (U. S. Fish and Wildlife Service 1984, Koonz and Rakowski 1985). At 11 American white pelican breeding sites near Washington state, Motschenbacher (1984) reported a minimum nest island size of 0.3 ha (0.75 ac). The United States Fish and Wildlife Service (USFWS) recommends a minimum nest island size of 0.4 ha (1.0 ac) (U.S. Fish and Wildlife Service 1984). Preferred nesting substrates include gravel, sand, and soil (Evans and Knopf 1993). American white pelicans have also been known to nest on rocky outcroppings and dense stands of aquatic vegetation (e.g., hardstem bulrush [*Scirpus lacustris*]) (U. S. Fish and Wildlife Service 1984; Motschenbacher 1984). If vegetation is present within the nesting colony, it primarily consists of grasses, forbs, and shrubs (U. S. Fish and Wildlife Service 1984). At the Crescent Island colony in Washington, American white pelicans placed their nests on bare ground under willows (S. Ackerman, personal communication). Similar sites are used for loafing by both breeding and non-breeding birds.

American white pelicans require shallow water for foraging. Most feeding occurs between water depths of 0.3-2.5 m (1-8.3 ft) (Anderson 1991). Feeding mostly takes place along lake or river edges, in open areas within marshes, on or below rapids, and occasionally in deep waters of lakes and rivers (Evans and Knopf 1993). American white pelicans feed largely on nongame or "rough" fish, amphibians, and crustaceans (Brittell et al 1976, Lingle and Sloan 1980). Hall (1925) reported that adult pelicans consume 1.8 kg (4.8 lbs) of food per day. Therefore, an abundant prey base predominantly consisting of warm water fish is essential for American white pelican survival (Smith et al. 1984). Although foraging sites close to their breeding area are more advantageous than ones further away, American white pelicans are known to travel 50-80 km (31-50 mi) from nesting colonies to feed (Motschenbacher 1984, U.S. Fish and Wildlife Service 1984).

LIMITING FACTORS

The USFWS identifies 3 major factors that limit the success of breeding and non-breeding American White pelican populations: habitat destruction, utilization of wetlands and lakes for other purposes (e.g., irrigation, hydroelectricity, waterfowl production), and intentional or unintentional human disturbance of nesting colonies. They also cite several other potential factors that may limit American white pelican populations, including decreases or fluctuations in food supply and availability, shooting, mammalian predation at breeding colonies (especially coyotes), pesticide contamination, and powerline collisions (U.S. Fish and Wildlife Service 1984).

Habitat destruction and human disturbance appear to be the most important factors limiting American white pelican populations in Washington (Motschenbacher 1984). Currently, all 5 sites where breeding colonies were thought to have historically been located no longer exist or are in areas of high human activity (Motschenbacher 1984). Additionally, pool fluctuations on the Columbia River and other water bodies, which result in inconsistent water depths, may adversely affect habitat quality. Finally, American white pelicans are susceptible to pesticides and other toxic contaminants. Organochlorine pesticide residues and mercury concentrate in adult tissues and in pelican eggs (Evans and Knopf 1993). Aquatic pollution contribute to accumulations of toxic compounds in warm water fish species, which can adversely affect pelicans (Boellstorff et al. 1985; L. Blus, personal communication).

MANAGEMENT RECOMMENDATIONS

In Washington, management of American white pelican populations should focus on protection of breeding colonies and protection of feeding and loafing areas of both breeding and non-breeding birds.

Disturbance

Disturbance of nesting colonies may result in: abandonment of nests and colonies; egg breakage; depredation of nests by avian predators; exposure of young to temperature stress; and trampling of young (U. S. Fish and Wildlife Service 1984). In order to reduce the impacts of human disturbance at nesting sites, managers should:

- Close nest islands to trespass during the breeding season from 15 March through 31 August (U. S. Fish and Wildlife Service 1984).
- Establish a buffer zone of 400-800 m (0.25-0.5 mi) and up to 1600 m (1.0 mi) from the nesting island which is closed to human activity such as boating (especially power boating), fishing, water skiing, discharge of fire arms, wildlife observation (Knopf 1975, U. S. Fish and Wildlife Service 1984).
- Restrict air traffic to an altitude of 610 m (2000 ft) above breeding colonies to reduce disruption of nesting (U. S. Fish and Wildlife Service 1984).
- Close channels with dikes to restrict boating/fishing in breeding areas, creating sanctuaries.
- Retain stable water levels during the nesting season so that flood waters do not inundate nests, and low water levels do not allow the emergence of mainland to island bridges that can be crossed by predators (Findholt and Diem 1988).
- Protect nesting areas and potential nesting islands from mammalian predators such as coyotes (U. S. Fish and Wildlife Service 1984).

In addition to protecting active nest colonies, such as the Crescent and Badger Island sites, land managers should identify and protect loafing/roosting and feeding areas of both breeding and non-breeding birds. The availability of adequate foraging areas is also vital to the success of American white pelican populations. These pelicans are known to commute between 50-80 km (31-50 mi) between nesting and foraging sites (U. S. Fish and Wildlife Service 1984). In areas surrounding American white pelican colonies or in primary feeding areas for non-breeding, wintering, or migrating birds, managers should:

- Identify and survey American white pelican foraging areas to determine presence and abundance of fish species that may serve as a prey base for pelican populations (U. S. Fish and Wildlife Service 1984).

- Maintain and manage American white pelican foraging areas for the prey base fish species (U. S. Fish and Wildlife Service 1984).
- Maintain shallow water between 0.3-2.5 m (1.0-8.3 ft.) in depth at foraging areas (U.S. Fish and Wildlife Service 1984). Deeper waters may be necessary where water level fluctuations occur.
- Maintain abundant fish populations and a diversity of water bodies, such as lakes, sloughs, rivers, and marshes (Smith et al. 1984, Findholt and Anderson 1995a,b).
- Limit disturbance at foraging areas from hunting and fishing activities, boating, and other recreational activities (U. S. Fish and Wildlife Service 1984).

Reestablishment of Breeding Colonies

With the recent establishment of breeding colonies in Washington, the presence of large numbers of non-breeding summer birds, and population increases on a continental scale, there exists the potential for American white pelicans to become regular breeders in this state. In order to reestablish American white pelican nesting sites in Washington, sanctuaries that protect the birds from human disturbance are needed (Motschenbacher 1984). The sanctuary should contain a nesting island of at least 0.1 ha (0.25 ac), and preferably 0.4 ha (1.0 ac) or larger (U. S. Fish and Wildlife Service 1984) if water level fluctuations are common. Additionally, protected foraging areas with a sufficient prey base must be provided. Buffer zones, which exclude all human activities including boating, fishing, and water skiing, should be established as suggested above.

Contaminants

American white pelicans are susceptible to pesticides and other toxic contaminants. Currently, pesticide and mercury levels are not thought to be a significant problem in American white pelican populations. However, the U.S. Fish and Wildlife Service (1984) recommends monitoring of such contaminants. Fish, pelican eggs, and other biota should be sampled and analyzed for pesticides, dioxins, and other toxicants. Sources of these pollutants should be identified and regulated if necessary. Biocides, including those used in fish rehabilitation programs, should be avoided in American white pelican feeding areas, especially those near nesting colonies (L. Blus, personal communication).

Avoid using any insecticide (Smith 1987) or herbicide (Santillo et al. 1989) in American white pelican nesting or foraging habitat. Organochlorine, organophosphate, and carbamate insecticides can be highly toxic to birds and fish and should be avoided (McEwen et al. 1972, Grue et al. 1983, Grue et al. 1986, Smith 1987). If insecticide or herbicide use is planned for areas where this species occurs, review Appendix A, which lists contacts that may be helpful when assessing pesticides and their alternatives.

Appropriate buffer widths for insecticide spray application near sensitive riparian and wetland areas range from 30-500 m (100-1650 ft) (Kingsbury 1975, Payne et al. 1988, Terrell and Bytnar-Perfetti 1989). When possible, leave a 500 m (1650 ft) (Kingsbury 1975) buffer around American white pelican nesting and foraging areas that is devoid of pesticides (Brown 1978, Smith 1987). Larger buffer areas may be necessary in areas where pesticide runoff affects a large area.

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KEY POINTS

Habitat Requirements

- Foraging occurs in shallow water 0.3-2.5 m (1.0-8.3 ft) deep.
- Breeding and stopover areas are clear of dense shrubbery or trees, include open aquatic habitats, and are free from human disturbance.
- American white pelicans nest on soil or sod.
- An abundant source of prey is essential, such as fish, amphibians, and crustaceans.

Management Recommendations

- Develop site-specific management plans for breeding areas.
- Identify, monitor, and protect primary feeding and loafing areas of breeding and non-breeding American white pelicans.
- Identify and survey American white pelican foraging areas to determine presence and abundance of fish species that may serve as a prey base for pelican populations.
- Maintain shallow water between 0.3-2.5 m (1.0-8.3 ft) in depth at foraging areas. Deeper waters may be necessary where water level fluctuations occur.
- Maintain or restore abundant fish populations in areas where American white pelicans feed.

- Prohibit boats and other human access within 400-800 m (0.25-0.5 mi) and up to 1,600 m (1 mi) of important foraging and breeding areas.
- Close nest islands to trespass during the breeding season from 15 March through 31 August.
- Restrict air traffic to an altitude of 610 m (2000 ft.) above breeding colonies to reduce disruption of nesting.
- Keep water levels stable during breeding season to protect nests from inundation or from predators which may cross land bridges during low water.
- Protect nesting areas and potential nesting islands from mammalian predators such as coyotes.
- Monitor for pesticides, dioxins, and other toxicants in prey fish.
- Avoid pesticide use in American white pelican habitat. If insecticide or herbicide use is planned for areas where this species occurs, review Appendix A that lists contacts that may be helpful when assessing pesticides and their alternatives.
- When possible, leave a 500 m (1650 ft) buffer around American white pelican nesting and foraging areas that is devoid of pesticides. Larger buffer areas may be necessary in areas where pesticide runoff affects a large area.
- Appropriate buffer widths for insecticide spray application near sensitive riparian and wetland areas range from 30-500 m (100-1650 ft).
- Breeding sanctuaries should contain:
 - a nesting island of at least 0.1 ha (0.25 ac), and preferably 0.4 ha (1.0 ac) or larger if water level fluctuations are common.
 - protected foraging areas with sufficient prey
 - buffer zones that exclude human activities.